

**REMARKS**

Claims 1 through 18 are pending in this Application. There are six independent claims. Claims 1, 6 and 12 are independent claims directed to an optical transmission system; claim 16, 17 and 18 are independent claims directed to an optical transmission method.

**Title of the Invention**

The Examiner asserted that the title is not descriptive and required a new title. In response the title has been amended.

**Claims 1, 3, 4, 6, 8, 9, 11, 13, 14 and 16 through 18 were rejected under 35 U.S.C. 103 for obviousness predicated upon Mitsuda et al. in view of Ogoshi et al.**

In the statement of the rejection, the Examiner admitted that Mitsuda et al. does not disclose an optical transmission system or method wherein the first signal light component having the first signal wavelength whose noise figure between said first signal multiplexing section and said receiving section is lower than that of said second signal wavelength and is selectively assigned as the signal light component multiplexed at the first signal multiplexing section. Nevertheless, the Examiner concluded that one having ordinary skill in the art would have been motivated to modify the optical transmission system and methodology of Mitsuda et al. by having a first signal wavelength at the first multiplexing section that has a lower noise figure than the second signal wavelength at the second multiplexing section in view of Ogoshi et al. This rejection is traversed.

There are fundamental differences between the claimed optical transmission system and method and those disclosed by the applied references that undermine the obviousness conclusion

under 35 U.S.C. 103. Specifically, in accordance with the present inventions, the multiplexing stations are installed **outside of the optical amplifier**. Applicants stress that in accordance with the present inventions, the multiplexing stations are installed **outside of the optical amplifier**, and on the ordinary optical transmission line. In this respect, the Examiner's attention is invited to Figs. 1, 4 and 6 of the present application.

In accordance with the present inventions, the noise figure of the amplifier itself is not adjusted. Specifically, fluctuations in S/N ratio are reduced **according to the correlation between the wavelength dependency of the noise figure and the transmission length**, as described in the written description of the specification. Such an optical transmission system and optical transmission method are neither disclosed nor suggested by the applied references.

**Specifically, Mitsuda et al. disclose a configuration of the optical fiber amplifier itself.** The optical amplifier disclosed by Mitsuda et al. comprises Er-doped optical fibers and WDM couplers. For example, advertizing to Fig. 6 of Mitsuda et al., the illustrated optical fiber amplifier comprises three Er-doped optical fibers 31-33 as the amplification fibers. **In addition, WDM couplers are installed in the amplifier.** Repeat, the WDM couplers are installed **in the amplifier**. In this respect, Applicants would note that the WDM coupler 21 is employed by Mitsuda et al. for coupling the first and second signals 51 and 53 with the pump light 55 from the pump laser diode 11. Mitsuda et al. state that as to this amplifier "... noise can be minimized by exciting the signal by the 0.98  $\mu$ m pump light at an output section of the optical fiber amplifier" (column 7 of Mitsuda et al., lines 64 through 66). In other words, the noise figure of the amplifier disclosed by Mitsuda et al. is directly adjusted **within the amplifier** itself as apparent from a reading of column 7 of Mitsuda et al., lines 20 through column 8, line 4.

Again, in contradistinction to the optical transmission system and methodology of Mitsuda et al., in accordance with the present invention, the multiplexing stations are installed **outside of the optical amplifier**, and on the ordinary optical transmission line. Accordingly, in accordance with the present inventions, the noise figure of the amplifier itself is not adjusted. Rather, fluctuations in the S/N ratio are reduced **according to the correlation between the wavelength dependency of the noise figure and the transmission length**. This type of system is neither disclosed nor suggested by Mitsuda et al. or Ogoshi et al. for that matter.

Indeed, Ogoshi et al. disclose a configuration of the optical fiber amplifier itself, such as a pumping configuration, as illustrated in Fig. 1 of Ogoshi et al. Clearly, the optical transmission system of the present invention is completely different from that of Ogoshi et al.

Based upon the foregoing, it should be apparent that even if the applied references are combined as suggested by the Examiner, and Applicants do not agree that the requisite fact-based motivation has been established, the claimed invention would not result. *Uniroyal, Inc. v. Rudkin-Wiley Corp.*, 837 F.2d 1044, 5 USPQ2d 1434 (Fed. Cir. 1988). Applicants, therefore, submit that the imposed rejection of claims 1, 3, 4, 6, 8, 9, 11, 13, 14 and 16 through 18 under 35 U.S.C. 103 for obviousness predicated upon Mitsuda et al. in view of Ogoshi et al. is not factually or legally viable and, hence, solicit withdrawal thereof.

**Claims 2, 5, 7, 10, 12 and 15 were rejected under 35 U.S.C. 103 for obviousness predicated upon Mitsuda et al. in view of Ogoshi et al. and Shimomura et al.**

This rejection is traversed. Specifically, claims 2 and 5 depend from independent claim 1, claims 7 and 10 depend from independent claim 6, and claims 12 and 15 depend from independent claim 11. Applicants incorporate herein the arguments previously advanced in

traversing the imposed rejection of claims 1, 6 and 11 under 35 U.S.C. 103 for obviousness predicated upon Mitsuda et al. in view of Ogoshi et al. The additional reference to Shimomura et al. does not cure the argued deficiencies in the attempted combination of Mitsuda et al. and Ogoshi et al. Indeed, Shimomura et al. merely disclose an optical add-drop multiplex (ADM). However, Shimomura et al. neither disclose nor suggest an optical transmission system as in the present invention. Accordingly, even if all the applied references are combined, and again Applicants do not agree that the requisite fact-based motivation has been established, the claimed inventions would not result. *Uniroyal, Inc. v. Rudkin-Wiley Corp.*, *supra*.

Applicants, therefore, submit that the imposed rejection of claims 2, 5, 7, 10, 12 and 15 under 35 U.S.C. 103 for obviousness predicated upon Mitsuda et al. in view of Ogoshi et al. and Shimomura et al. is not factually or legally viable and, hence, solicit withdrawal thereof. Accordingly, favorable consideration is solicited.

To the extent necessary, a petition for an extension of time under 37 C.F.R. 1.136 is hereby made. Please charge any shortage in fees due in connection with the filing of this paper, including extension of time fees, to Deposit Account 500417 and please credit any excess fees to such deposit account.

Respectfully submitted,

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